

CLAIMS

What is claimed is:

1. A method for forming an arbitrarily-shaped electrode on a medical device, comprising:
 - forming a device body from a nonconductive material;
 - determining a shape for the electrode;
 - forming the electrode from a conductive, biocompatible material in the determined shape;
 - attaching an electrically conductive element to the electrode;
 - affixing the electrically conductive element and the electrode to a section of the device;
 - overmolding the electrode with an overmold material; and
 - removing a portion of the overmold material above the electrode sufficient to expose the electrode.
2. The method of claim 1, wherein the conductive, biocompatible material is chosen from the group consisting of platinum and gold.
3. The method of claim 1, wherein the step of removing a portion of the overmold material comprises abrading the overmold material sufficiently to expose the electrode.
4. The method of claim 1, wherein the electrically conductive element is a wire.

5. The method of claim 4, wherein the wire is run along a tube.
6. The method of claim 5, further comprising:

placing a tube within a jacket; and wherein

the step of affixing the wire and electrode to a section of the device comprises attaching the wire and electrode to the tube prior to placing the tube within the jacket.
7. The method of claim 4, wherein the wire is co-extruded with the tube.
8. The method of claim 7, wherein the step of attaching the electrically conductive element to the electrode comprises forming a via through the device body, the via at least partially overlaying the wire and at least partially underlying the electrode.
9. The method of claim 1, wherein the electrically conductive element is a trace.
10. The method of claim 9, wherein the trace is electro-deposited on the exterior of the device body.
11. The method of claim 10, wherein:

the device body is a tube; and

the method further comprises the step of concealing the trace by inserting the tube into an electrically nonconductive jacket.

12. The method of claim 11, further comprising the steps of:

removing nonconductive material from a portion of the tube in order to expose a portion of the trace;

removing nonconductive material from a portion of the jacket in order to further expose a portion of the trace; and

electrically connecting the arbitrarily-shaped electrode to the exposed portion of the trace.

13. The method of claim 1, wherein the step of overmolding the electrode with an overmold material comprises overmolding the electrode with an electrically nonconductive material in order to form a tip.

14. The method of claim 14, wherein the step of forming the electrode from a conductive, biocompatible material in the determined shape occurs prior to the step of affixing the electrically conductive element and the electrode to a section of the device.

15. A catheter for use in a medical procedure, comprising:

a catheter body;

a catheter tip operably connected to the catheter body;

at least one arbitrarily-shaped electrode overmolded by a portion of the catheter; and

at least one energy delivery element operably connected to the at least one arbitrarily-shaped electrode.

16. The catheter of claim 15, wherein:

the arbitrarily-shaped electrode is formed by electro-depositing a conductive, biocompatible material within a depression formed on the catheter tip; and

the catheter tip is further overmolded over the electrode.

17. The catheter of claim 15, wherein:

the catheter body comprises a lumen tube and a jacket, the lumen tube nested within the jacket;

the energy delivery element is formed on an exterior surface of a lumen tube; and

the arbitrarily-shaped electrode extends through the jacket to the energy delivery element.